MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3 2016/2017

TCS 3191 – CLIENT-SERVER COMPUTING

(All sections / Groups)

26th MAY 2017
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This examination paper consists of 4 pages (including the cover page) with 6 questions only.
2. All questions carry equal weight (10 marks). The allocation of marks for each section within a question is given in the paper.
3. Answer **ALL** questions.
4. Write your answers in the answer booklet provided.

Question 1 [10 marks]

a) Describe **THREE** main components of client-server computing. What is the main function of middleware?
[4 marks]

b) Identify the **FOUR** situations for Remote Data Access (RDA) deployment.
[4 marks]

c) State **TWO** reasons why there is a need for SQL middleware.
[2 marks]

Question 2 [10 marks]

a) In a three-tiered model of transaction processing system (TPS), where should you locate the transaction server? What should be stored on the server? What kind of processing the server should do?
[3 marks]

b) State **ONE** goal of Common Object Request Broker Architecture (CORBA). Describe the **THREE** broad categories of objects in CORBA.
[4 marks]

c) There are **THREE** limitations of mobile environment. Identify the limitations.
[3 marks]

Question 3 [10 marks]

a) There are several categories of servers. Identify the servers that can do the following tasks:
   i. Store and manage data only.
   ii. Provide gateway to other Local Area Networks (LANs), networks and computers.
   iii. Manage a work group's application and data files, so that they may be shared by the group.
   iv. Perform application logic processing.
[2 marks]

b) From client perspective, explain the possible reason why the Remote Procedure Call (RPC) on the server-side sends:
   i. No response message.
   ii. Only one response message.
   iii. More than one response messages.
[3 marks]

Continued...

c) Explain what each component of the following data allocation metric tries to achieve:
   i. Locality of reference.
   ii. Reliability/availability.
   iii. Storage costs.
   iv. Performance.
   v. Communication costs.

[5 marks]

Question 4 [10 marks]

a) Two-phase commit (2-PC) is the standard protocol for making commit and abort of a transaction atomic. Explain the steps in Phase 1 and Phase 2 of 2-PC protocol.

[5 marks]

b) Explain the steps involved in programming a Remote Method Invocation (RMI) application.

[4 marks]

c) Explain **ONE** new requirement of distributed multimedia system (DMS).

[1 mark]

Question 5 [10 marks]

a) Describe the **THREE** benefits of three-tier client-server architecture over two-tier client-server architecture.

[3 marks]

b) Name the first popular commercial Network Operating System (NOS). Explain the functions of **TWO** major innovations presented in that NOS.

[3 marks]

c) Compare **TWO** differences between Embedded SQL (ESQL) and SQL Call-Level Interface (SQL CLI).

[4 marks]

Continued...

Question 6 [10 marks]

a) Describe the difference between queued and direct transaction processing.
[2 marks]

b) Explain **THREE** similarities and **TWO** differences between CORBA and DCOM.
[3 marks]

c) Compare between 'Strongly Connected Operation' and 'Weakly Connected Operation' in file system operation for mobile computing.
[5 marks]

End of Paper.